

MONDAY, OCTOBER 18, 2004

9:00-9:05 am Welcoming Remarks

Session I

Chairperson: Dr. Timothy Veenstra, LPAT, SAIC-Frederick, Inc.

9:05-9:35 am **Cancer Proteomics: From Discovery to Diagnostics**

Daniel W. Chan, Ph.D., Johns Hopkins University

9:35-10:00 am **Serum Peptide Signatures of Solid Tumor Cancers**

Josep Villanueva and Paul Tempst, Memorial Sloan-Kettering Cancer Center

10:00-10:25 am **Discovery of Biomarkers in Human Urine by Capillary Electrophoresis Coupled Mass Spectrometry: Towards New Diagnostic and Therapeutic Approaches**

Stefan Wittke, Thorsten Kaiser, Michael Walden, and Harald Mischak; Mosaiques-diagnostics GmbH

10:25-10:45 am **Characterization of the Antiproliferative Factor from Interstitial Cystitis Patients**

Thomas P. Conrads¹, Zoltan Szekely³, Timothy D. Veenstra¹, Joseph J. Barchi, Jr.⁴, Chen-Ou Zhang, Kristopher R. Koch², Christopher J. Michejda³, and Susan K. Keay^{2,4}*

¹Laboratory of Proteomics and Analytical Technologies, Science Applications International Corporation (SAIC)–Frederick; ²Division of Infectious Diseases, Department of Medicine, University of Maryland School of Medicine; ³Molecular Aspects of Drug Design Section, Structural Biophysics Laboratory, Center for Cancer Research, and Laboratory of Medicinal Chemistry, Center for Cancer Research, National Cancer Institute; ⁴Research Service, Veterans Affairs Maryland Health Care System

10:45-11:15 am **Coffee Break**

Session II

Chairperson: Robert Weinberger, CE Technologies, Inc.

11:15-11:40 am **Aptamer Affinity CE for Capture of Target Proteins**

Linda B. McGown and Adam C. Connor, Rensselaer Polytechnic Institute

11:40 am-12:00 pm **Analyzing the Activities of HIV-1 Reverse Transcriptase by Capillary Electrophoresis**

Scott R. Budihas¹, Arkadiusz Bibillo¹, King C. Chan², Stuart F.J. Le Grice¹, Michael A. Parniak³, Robert J. Crouch⁴, Sergei A. Gaidamakov⁴, Haleem J. Isaaq², Antony Wamiru⁵, James B. McMahon⁵, and John A. Beutler⁵

¹HIV DRP, NCI-Frederick, ²SAIC-Frederick; ³University of Pittsburgh, ⁴NICHD, NIH, ⁵MTDP, NCI-Frederick

12:00-12:20 pm **An Automated Multicapillary Instrument for Mutation Discovery in Pooled DNA Samples by Constant Denaturant Capillary Electrophoresis**

Qingbo Li¹, Chiranjit Deka², Arthur W. Miller², Songsan Zhou³, John Best⁴, Sean Connell⁵, Joseph M. Fallon², Brian J. Glassner², Kevin Arnold², Vadim Plotsker⁶, Xiao-Cheng Li-Sucholeiki², Aoy Tomita-Mitchell⁷, William G. Thilly⁸, and Barry L. Karger⁹

¹Department of Biochemistry and Molecular Biology, The Pennsylvania State University; ²Beckman Coulter Inc.; ³Material Research Lab, The Pennsylvania State University; ⁴LabAlliance; ⁵SpectruMedix LLC; ⁶Optics 1; ⁷Division of Cardiology, Abramson Research Center, Children's Hospital of Philadelphia; ⁸Biological Engineering Division, Massachusetts Institute of Technology; ⁹Barnett Institute and Department of Chemistry, Northeastern University

12:20-12:40 pm **Advances in Bilayered Phospholipid Micelles for Electrokinetic Chromatography**

Lisa Holland, John Mills, and Theron Pappas; West Virginia University

12:40-1:00 pm **New Dynamic Coatings Enable Rapid Capillary Zone Electrophoresis Separation of Clinically Important Protein Isoforms**

William W.P. Chang, David C. Bomberger, and Luke V. Schneider; Target Discovery, Inc.

1:00-3:00 **Lunch and Poster Session I**

Session III: Young Scientist Session *Sponsored by Pfizer*
Chairperson: Dr. Jocelyn McKeon

3:00-3:15 pm **Rapid Assessment Using Separations Chemistry: CE Based Assays for Carcinogens and Biomarkers**

Melissa Gayton-Ely, Kim M. Hanson, Theron Pappas, Jocelyn McKeon, Lisa Holland, West Virginia University

3:15-3:30 pm **Proteomic Analysis of Single MCF-7 Breast Cancer Cells**

Melissa Harwood and Norman Dovichi, University of Washington

3:30-3:45 pm **Flow Counterbalanced Capillary Electrophoresis using Packed Capillary Columns: Resolution of Chiral Enantiomers and 79Br/81Br**

Wm. Hampton Henley¹, Richard T. Wilburn¹, Andrew M. Crouch², and James W. Jorgenson^{1}*

¹The Department of Chemistry, The University of North Carolina at Chapel Hill, ²The Department of Chemistry, University of Stellenbosch, South Africa

3:45-4:00 pm **MEKC-EC Analysis of Catecholamine and Indoleamine Metabolites Aimed at Understanding Neurotransmission in the Fly, *Drosophila melanogaster***

Tracy L. Paxon, Paula R. Powell, Kyung-An Han, Andrew G. Ewing, Penn State University

- 4:00-4:15 pm** **An Integrated Microfluidic System for On-Chip Protein Preconcentration, Separation and Labeling**
Daria Petersen¹, Robert S. Foote², Oliver Geschke³ and J. Michael Ramsey¹
¹Department of Chemistry, University of North Carolina, ²Chemical and Analytical Science Division, Oak Ridge National Laboratory, ³Department of Micro and Nanotechnology, Technical University of Denmark
- 4:15-4:30 pm** **Break**
- 4:30-4:45 pm** **Novel Serotonin Catabolism in the Central Nervous System of Mammals Using Capillary Electrophoresis and Laser-Induced Fluorescence (CE-LIF)**
Leah N. Squires, Jeffrey N. Stuart, Stanislav S. Rubakhin, and Jonathan V. Sweedler, The University of Illinois and the Beckman Institute
- 4:45-5:00 pm** **Development of a Capillary Electrophoresis Method for Characterizing the Enzymatic Deacetylation of Chitin for the Production of Chitosan**
Marie-Eve Beaudoin¹, Karen C. Waldron¹, Julie Gauthier¹, Isabelle Boucher²
¹Department of Chemistry, University of Montreal and ²ISM Biopolymer Inc.
- 5:00-5:15 pm** **Subcellular Distribution of Doxorubicin in Individual Acidic Organelles by Capillary Electrophoresis with Laser-Induced Fluorescence Detection**
Yun Chen and Edgar A. Arriaga, University of Minnesota
- 5:15-5:30 pm** **Determination of Dissociation Constants for an Amyloid Precursor Peptide and Heparins or Heparan Sulfate Using Affinity Capillary Electrophoresis**
Jocelyn McKeon¹ and Lisa A. Holland²
¹College of Notre Dame of Maryland, Department of Chemistry; ²West Virginia University, Department of Chemistry
- 6:00-8:00 pm** **Reception**
Sponsored by Beckman Coulter
An informal reception will be hosted by Beckman Coulter, during which we will offer an equipment exhibition with participation by the major instrumentation companies. You will be introduced to all the latest technologies and how they can apply to your laboratory. Representatives from the largest suppliers will be available to demonstrate and discuss applications and techniques.

TUESDAY, OCTOBER 19, 2004

Session IV

Chairperson: Dr. Joe P. Foley, Drexel University

- 8:45-9:10 am** **Microfluidic Devices for Organelle Analysis**
Edgar A. Arriaga¹, Chris Whiting¹, Karen Olson², and Ciaran Duffy³
¹Department of Chemistry, University of Minnesota, ²Department of Biomedical Engineering, University of Minnesota, ³National Center for Sensor Research, Dublin City University
- 9:10-9:30 am** **High-Speed and High-Sensitivity Analysis of Protein Sizing and Quantitation Using a Microfluidic LabChip[®] System**
Bahram Fathollahi, Adrian Winoto, Jim Mikkelsen, Michael Spaid, and Andrea Chow; Caliper LifeSciences
- 9:30-9:50 am** **Chip-Based Nano electrospray Mass Spectrometry Coupled with Nanoscale HPLC Techniques for Automated Protein Identification**
Thomas N. Corso, Xian Huang, Amie Prince, Sheng Zhang, Colleen K. Van Pelt, and Jack Henion, Advion BioSciences, Inc.
- 9:50-10:10 am** **Solution Isoelectric Focusing in Proteomic Strategies**
Yanming An, Zongming Fu and Catherine Fenselau, Department of Chemistry and Biochemistry and Greenebaum Cancer Center, University of Maryland
- 10:10-10:30 am** **Applying a Divide and Conquer Strategy to Biomarker Discovery**
Jeff Chapman, Michael H. Simonian, Edna Betgovargez, and John S. Hobbs, Systems Biology Development Center, Beckman Coulter Inc.
- 10:30-11:00 am** **Break**

Session V

Chairperson: Thomas P. Conrads, Laboratory of Proteomics and Analytical Technologies, Science Applications International Corporation (SAIC)-Frederick

- 11:00-11:25 am** **One- and Two-Dimensional Miniaturized Electrophoresis of Proteins with Native Fluorescence Detection**
Edward S. Yeung and Chanan Slusznny, Ames Laboratory-USDOE, Iowa State University
- 11:25-11:50 am** **16O/18O Stable Isotope Labeling for Comparative Membrane Proteomics**
Josip Blonder M.D.¹, Martha L. Hale², King C. Chan¹, Li-Rong Yu¹, Thomas P. Conrads¹, David A. Lucas¹, Ming Zhou¹, Miche I R. Popoff³, Haleem J. Issaq¹, Bradley G. Stiles², and Timothy D. Veenstra¹
¹Laboratory of Proteomics and Analytical Technologies, SAIC-Frederick, Inc., National Cancer Institute at Frederick, ²Toxinology Division, Department of Immunology and Molecular Biology, U.S. Army Medical Research Institute of Infectious Diseases, ³Anaerobic Bacteria and Toxins Unit, Institut Pasteur

11:50 am-12:15 pm **Immunoaffinity Capillary Electrophoresis as a Tool for Early Diagnosis of Septic Shock and as a Potential Screening Test in Its Prognosis**

Norberto A. Guzman, Bioanalytical Drug Metabolism, Johnson & Johnson Pharmaceutical Research and Development, L.L.C.

12:15-12:40 pm **Top-Down Multidimensional Separation Technologies Targeting Comprehensive Proteomics**

Cheng S. Lee¹, Yueju Wang¹, Diya Ren², Jonathan W. Cooper², Brian M. Balgley², Paul Rudnick², Erin L. Evans², and Don L. DeVoe²

¹Department of Chemistry and Biochemistry, University of Maryland,

²Calibrant Biosystems

12:40-1:00 pm **Redefining Stress Response-The Role of Nrf2**

Shyam Biswal, PhD, Johns Hopkins University School of Public Health

1:00-2:45 pm **Lunch and Poster Session II**

Session VI

Chairperson: Josip Blonder M.D., Laboratory of Proteomics and Analytical Technologies, SAIC-Frederick, National Cancer Institute at Frederick

2:45-3:10 pm **The Analysis of Synthetic Organic, Neutral Polymers Using Nonaqueous Capillary Gel Electrophoresis (NACGE)**

Ira S. Krull, Northeastern University

3:10-3:35 pm **Chiral Microemulsion Electrokinetic Chromatography**

Joe P. Foley, Drexel University

3:35-4:00 pm **Using Capillary Electrophoresis to Measure Sequence-Specific Counterion Binding to DNA Oligomers**

Nancy C. Stellwagen, University of Iowa

4:00-4:20 pm **Analysis of Stable DNA Minihairpins by Capillary Electrophoresis**

Earle Stellwagen, University of Iowa

4:20-4:40 pm **High-Speed HPLC Separations of Biomolecules on Porous and Superficially Porous Supports**

Cliff Woodward, Ph.D., Agilent Technologies, Inc.

4:40-5:00 pm **Determination of Impurities in the Drug 5-Aminosalicylic Acid by Micellar Electrokinetic Capillary Chromatography Using an Electrolyte pH That Approaches the pI of the Parent Compound**

Robert Weinberger, CE Technologies, Inc.

5:00 pm **Closing Remarks**

Poster Session I

Monday, October 18, 2004 1:00-3:00 pm

- 1. Studying D-aspartic Acid in *Aplysia californica* Neuronal Connectives and Processes Using Capillary Electrophoresis with Laser-Induced Fluorescence Detection;** Hai Miao, Stanislav S. Rubakhin, and Jonathan V. Sweedler; Department of Chemistry and the Beckman Institute, University of Illinois
- 2. Measurement of Argininosuccinate in Individual Neurons and Neuronal Clusters of *Aplysia californica* Using Capillary Electrophoresis with Laser-Induced Fluorescence Detection;** Xiaoying Ye, Won-Suk Kim, Stanislav S. Rubakhin, and Jonathan V. Sweedler; Department of Chemistry and the Beckman Institute, University of Illinois
- 3. Protein Separations at Elevated Field Strengths Using Capillary Electrophoresis with Laser-Induced Fluorescence;** James R. Kraly¹, Megan Jones¹, Brian Reid², Norman J. Dovichi¹; ¹Department of Chemistry, University of Washington, ²Fred Hutchinson Cancer Research Center
- 4. Detection of a D-aspartate synthase in *Aplysia californica* Using Capillary Electrophoresis with Off-Line Radionuclide Detection;** Cory Scanlan, Hai Miao, Stanislav S. Rubakhin, and Jonathan Sweedler; University of Illinois at Urbana-Champaign
- 5. Forensic Analysis of Ballpoint Pen Inks Using Capillary Electrophoresis;** J.D. Brewer¹, K.A. Hagan¹, J.M. Egan²; ¹FBI/ORISE, ²FBI
- 6. Organic Solvent High-field Amplified Stacking for Basic Compounds in Capillary Electrophoresis,** Zak K. Shihabi, Wake Forest University School of Medicine
- 7. Simplified Hemoglobin Chains Detection by Capillary Electrophoresis;** Zak K. Shihabi and Mark E. Hinsdale; Wake Forest University School of Medicine
- 8. Amiodarone Analysis by Capillary Electrophoresis;** Zak K. Shihabi and Mark E. Hinsdale; Wake Forest University School of Medicine
- 9. Theoretical Aspects of a Photothermal Absorbance Detector;** Stephen E. Johnston and James W. Jorgenson; University of North Carolina at Chapel Hill
- 10. Serum Proteomic Patterns for Canine Cancer Detection,** DaRue A. Prieto¹, Chand Khanna², Thomas P. Conrads¹, Haleem J. Issaq¹, and Timothy D. Veenstra¹; ¹Laboratory of Proteomics and Analytical Technologies, SAIC-Frederick, Inc., National Cancer Institute at Frederick, ²CCR-COP and Tumor and Metastasis Biology Section, Pediatric Oncology Branch, CCR, NCI, NIH
- 11. Quantitative Proteome Analysis of Telomere-differential Human Breast Epithelial Cells;** Li-Rong Yu¹, Hidetoshi Tahara², Ming Yi³, Thomas P. Conrads¹, King C. Chan¹, David A. Lucas¹, Haleem J. Issaq¹, Robert M. Stephens³, J. Carl Barrett⁴, and Timothy D. Veenstra¹; ¹Laboratory of Proteomics and Analytical Technologies, SAIC-Frederick, Inc., NCI-Frederick; ²Hiroshima University; ³Advanced Biomedical Computing Center, SAIC-Frederick, Inc., NCI-Frederick; ⁴National Cancer Institute, NIH
- 12. Identification of Protein-Protein Interactions in Human Serum;** Ming Zhou, David A Lucas, King C Chan, Haleem J Issaq, Timothy D Veenstra, and Thomas P Conrads; SAIC-Frederick, Inc.
- 13. Global Proteomic Analysis of Mouse Serum;** Brian L. Hood¹, Ming Zhou¹, King C. Chan¹, David A. Lucas¹, Robert Stephens², Denise Hise³, Carl F. Schaefer³, Haleem J. Issaq¹, Timothy D. Veenstra¹, and Thomas P. Conrads¹; ¹Laboratory of Proteomics and Analytical Technologies, SAIC-Frederick, Inc., National Cancer Institute, ²The Advanced Biomedical Computing Center, SAIC-Frederick, Inc., National Cancer Institute, ³Center for Bioinformatics, National Cancer Institute

- 14. Application of PDMS Valves for Controlled Pressure Injections on Microchips;** Jennifer Monahan-Dian¹, James M. Karlinsey¹, Daniel J. Marchiarullo¹, Jerome P. Ferrance¹, and James P. Landers^{1,2}; ¹Department of Chemistry, University of Virginia, ²Department of Pathology, University of Virginia Health Science Center
- 15. BEKC Analysis for Affinity Interaction of Cationic and Neutral Compounds;** Theron Pappas, John Mills, and Lisa Holland; West Virginia University
- 16. Sequencing Prolidase from Pig Kidney Using Multiple Enzymatic Digestion and LC-ESI-QTOF;** Casado B.^{1,2}, Zanone C.², Baraniuk N.J.¹, Cetta G.², Pannell K.L.³, Annovazzi L.², Viglio S.², Hassan K.⁴, Conti B.⁴, Perugini P.⁴, Genta I.⁴, Iadarola P.²; ¹Proteomics Laboratory, Georgetown University Medical Center, ²Department of Biochemistry "A Castellani", University of Pavia, Italy ³Proteomics and Mass Spectrometry Facility, Cancer Research Institute, University of South Alabama, ⁴Department of Pharmaceutical Chemistry, University of Pavia, Italy
- 17. Chiral Temperature Gradient Focusing;** David Ross, Karin M. Balss, Wyatt N. Vreeland, and Karen W. Phinney; National Institute of Standards and Technology
- 18. Proteomic Analysis Using Two-dimensional Liquid Chromatography-Capillary Electrophoresis-Sheathless Electrospray Ionization Mass Spectrometry;** Haleem J. Issaq, George M. Janini, King C. Chan, Thomas P. Conrads and Timothy D. Veenstra; Laboratory of Proteomics and Analytical Technologies, SAIC-Frederick Inc., National Cancer Institute, National Institutes of Health

Poster Session II

Tuesday, October 19, 2004, 1:00-2:45 pm

- 19. Characterization of a Monolithic Stationary Phase for Capillary Electrochromatography;** Cabral, Jean-Louis, Bandilla, Dirk; Skinner, and Cameron D.; Concordia University
- 20. Identification of the prokaryotic ligand-gated ion channels and their implications for the origins and mechanisms of animal Cys-loop ion channels;** Asba Tasneem¹, Lakshminarayan M. Iyer², Eric Jakobsson¹, and L. Aravind²; ¹Beckman Institute University of Illinois at Urbana-Champaign, ²National Center for Biotechnology Information, National Library of Medicine, National Institutes of Health
- 21. The Generation of Chaotic Advection with Grooves Placed on the Top and Bottom of the Channel;** Peter B. Howell Jr., David Mott, Stephanie Fertig, Carolyn Kaplan, Elaine C. Oran, Frances Ligler; ¹Center for Bio/Molecular Science and Engineering, Naval Research Laboratory, ²Laboratory of Computational Physics and Fluid Dynamics, Naval Research Laboratory
- 22. Particle swarm optimization for analysis of mass spectral serum profiles;** Ressom, H; Saha, D; Loffredo C; and Goldman, R; Georgetown University, Department of Oncology, Lombardi Comprehensive Cancer Center
- 23. Immobilized Trypsin Micro-reactor on a Polymer Support for Protein Digestion and Sequencing;** Vintiloiu, Anda¹, Cabral, Jean-Louis¹, Waldron, Karen C.², and Skinner, Cameron D.¹; ¹Concordia University, ²Université de Montréal
- 24. Enrichment of Low Molecular Weight (LMW) Serum Fraction for MALDI TOF Profiling of Hepatocellular Carcinoma (HCC);** Orvisky, E¹; Ressom, H¹; Wang, A¹; Saha, D¹; Goldman, L¹; Petricoin, EF²; Conrads, TP³; Veenstra, TD³; Liotta, LA⁴; Drake, SK⁵; Hortin, GL⁵; Loffredo, CA¹ and Goldman, R¹; ¹Georgetown University, Department of Oncology, Lombardi Comprehensive Cancer Center, ²Clinical Proteomics Program, NCI/FDA, Center for Biologics Evaluation, FDA, ³Laboratory of Proteomics and Analytical Technologies, SAIC-Frederick and Biomedical Proteomics Program, NCI, ⁴Laboratory of Pathology, NCI, ⁵Clinical Chemistry Service, Department of Laboratory Medicine, NIH
- 25. Noncovalent protein labeling with the near-infrared dye HITCI for analysis by CE-LIF;** Weiyang Yan and Christa L. Colyer; Department of Chemistry Wake Forest University
- 26. SELDI proteomic profiling in search for lung cancer biomarkers in plasma;** Zhen Xiao¹, Brian T. Luke², Timothy D. Veenstra¹, Thomas P. Conrads¹, Mylinh Smith³, Peter Greenwald⁴, Jerry W. McLarty³, Iqbal U. Ali⁴; ¹Laboratory of Proteomics and Analytical Technologies, SAIC-Frederick, Inc., National Cancer Institute at Frederick, ²Advanced Biomedical Computing Center, SAIC-Frederick, Inc., National Cancer Institute at Frederick, ³Louisiana State University Health Sciences Center, ⁴Division of Cancer Prevention, National Cancer Institute
- 27. An Asymmetric Squarylium Dye for Protein Assays by CE-LIF;** Amy Sloat¹, Christa L. Colyer¹, Hiroyuki Nakazumi², Shigeyuki Yagi²; ¹Department of Chemistry, Wake Forest University, ²Department of Applied Materials Science, Graduate School of Engineering, Osaka Prefecture University
- 28. Effect of Surfactant Counterion and Organic Modifier on the Properties of Unilamellar Vesicles in Electrokinetic Chromatography;** Stephanie A. Schuster and Joe P. Foley; Drexel University Chemistry Department
- 29. Gradient Elution in Electrokinetic Chromatography (EKC) Utilizing Highly Sulfated Cyclodextrins for Chiral Separations;** Kimberly A. Kahle and Joe P. Foley; Drexel University Chemistry Department

- 30. Microchip-PCR for STR analysis**, Lindsay A. Legendre¹, Joan M. Bienvenue¹, Jerome P. Ferrance¹, James P. Landers^{1,2}, ¹Department of Chemistry, University of Virginia, ²Department of Pathology, University of Virginia
- 31. Development of Polymeric Sieving Matrices for DNA Separations**, Joan M. Bienvenue¹, Kate Wilson, B.S.¹, Jerome P. Ferrance¹, James P. Landers^{1,2}, ¹Department of Chemistry, University of Virginia, ²Department of Pathology, University of Virginia Health Sciences Center
- 32. A Solution-based Method for Multidimensional Analysis of Membrane Proteins**, M.C. Rodriguez-Galan¹, J. Blonder², K.C. Chan², A.D. Lucas², C.F. Schaefer³, L.R. Yu², T.P. Conrads², H.J. Issaq², H.A. Young¹, and T.D. Veenstra², ¹Laboratory of Experimental Immunology, National Cancer Institute at Frederick, ²Laboratory of Proteomics and Analytical Technologies, SAIC-Frederick, Inc., National Cancer Institute at Frederick, ³Center for Bioinformatics, National Cancer Institute
- 33. A Method for Characterization of Detergent-resistant Membrane Rafts using Liquid Chromatography-Tandem Mass Spectrometry**, Josip Blonder¹, Martha L. Hale², David A. Lucas¹, Li-Rong Yu¹, Thomas P. Conrads¹, Haleem J. Issaq¹, Bradley G. Stiles², and Timothy D. Veenstra¹, ¹Laboratory of Proteomics and Analytical Technologies, SAIC-Frederick, Inc., National Cancer Institute, ²Department of Immunology and Molecular Biology, U.S. Army Medical Research Institute of Infectious Diseases
- 34. Quantitative proteomic analysis of inorganic phosphate-induced murine MC3T3-E1 osteoblasts**, Thomas P. Conrads¹, Kelly A. Conrads², Li-Rong Yu¹, David A. Lucas¹, Ming Zhou¹, King C. Chan¹, Kerri A. Simpson², Carl F. Schaefer³, Haleem J. Issaq¹, Timothy D. Veenstra¹, and George R. Beck Jr.², ¹Laboratory of Proteomics and Analytical Technologies, SAIC-Frederick, Inc., National Cancer Institute, ²Laboratory of Cancer Prevention, Center for Cancer Research, National Cancer Institute, ³Center for Bioinformatics, National Cancer Institute